

REMARKS

Claims 1, 3-11, and 13-32 are pending. Claims 1, 5, 9, 15, and 17 have been amended and new claims 21-32 have been added to recite additional features of the embodiments disclosed in the specification.

Reconsideration of the application is respectfully requested for the following reasons.

In the Office Action, claims 1, 3, 4, and 19 were rejected under 35 USC § 103(a) for being obvious in view of Fukunaga, Hayashi, and Fridrich taken in combination with common knowledge in the art. Applicants submit that amended claim 1 is allowable over this combination.

Claim 1 recites that the data hiding operation includes embedding a number of bits of the error information into a frame currently being encoded, said embedding performed by “modifying at least one parameter of the frame currently being encoded in accordance with one or more remainders of the parameter divided by 2.” (See, for example, Paragraph [66] of the specification). The Fukunaga and Hayashi patents do not teach or suggest these features, and neither does the newly cited Fridrich patent.

The Fridrich patent discloses dividing a quantization factor $Q(i,j)$ by two if the factor is even during a message-embedding process. (See Paragraph [91]). However, claim 1 recites a data hiding operation that involves modifying at least one parameter of the frame currently being encoded “in accordance with one or more remainders of the parameter divided by 2.” The Fridrich patent does not teach or suggest these features.

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Moreover, if the quantization factor is odd, Fridrich discloses replacing the quantization factor with a $\text{floor}(Q(i,j))$ value, which corresponds to the largest integer smaller than or equal to a quotient of the parameter divided by two. (See Paragraph [92]). The use of a quotient for this purpose is different from the remainder(s) cited in claim 1. The claimed invention uses one or more remainders for comparison with the data to be hidden, but Fridrich uses a quotient to replace its quantization parameter with the floor value.

Claims 15-17 and 20 were rejected under 35 USC § 103(a) for being obvious in view of a Fukunaga-Hayashi-Fridrich combination. Applicants request withdrawal of this rejection on grounds that claim 15 has been amended to recite features similar to those which patentably distinguish claim 1 from this combination.

Claims 9-11 and 13 were rejected under 35 USC § 103(a) for being obvious in view of a Fukunaga-Khansari-Hayashi-Fridrich combination. Applicants request withdrawal of this rejection on grounds that claim 9 has been amended to recite features similar to those which patentably distinguish claim 1, which features are not taught or suggested by the Fukunaga, Khansari, Hayashi, and Fridrich references, whether taken alone or in combination.

Claims 5 and 6 were rejected under 35 USC § 103(a) for being obvious in view of a Fukunaga-Hayashi-Fridrich-Lin combination taken with common knowledge. Applicants request withdrawal of this rejection on grounds that the Lin publication does not teach or suggest the features of base claim 1 missing from the Fukunaga, Hayashi, and Fridrich references.

In addition, claim 5 recites that said at least one parameter is “at least one of a quantization parameter corresponding to the frame currently being encoded or a sum of levels of a block to which a discrete cosine transform is performed.” See, for example, page 20, lines 16-19 of the specification for support. These features are not taught or suggested by the cited references, whether taken alone or in combination.

Claims 7 and 8 were rejected for being obvious in view of a Fukunaga-Hayashi-Fridrich-Bannon combination taken with common knowledge, claim 14 was rejected for being obvious in view of Fukunaga-Khansari-Hayashi-Fridrich combination, and claim 18 was rejected for being obvious in view of a similar combination of references. Applicants request withdrawal of these rejections on grounds that claims 7, 8, 14, and 18 are allowable at least by virtue of the features recited in their base claims.

New claims 21-32 have been added to the application.

Claim 21 recites that said modifying includes dividing data to be hidden by 2 to obtain a first remainder, dividing the at least one parameter by 2 to obtain a second remainder, comparing the first and second remainders, and modifying the at least one parameter based on a result of the comparison, the number of bits of the error information being embedded in the frame currently being encoded based on the modification to the at least one parameter. (See, for example, Paragraph [66] of the specification for support). These features are not taught or suggested by the cited references, whether taken alone or in combination.

Claims 23 and 25 recite similar features depending from claims 9 and 15 respectively.

Claim 27 recites that when the parameter is the quantization parameter and the one or more remainders are not equal to the data to be hidden, the value of the quantization parameter increases by 1. (See, for example, page 18, lines 20-24 of the specification for support). These features are not taught or suggested by the cited references, whether taken alone or in combination.

Claim 28 recites that when the parameter is the sum of levels of the block and the one or more remainders are not equal to the data to be hidden, the value of a level having a highest frequency decreases by 1. (See, for example, page 21, lines 5-13, of the specification for support). These features are not taught or suggested by the cited references, whether taken alone or in combination.

Claims 29 and 30 and claims 31 and 32 recite similar features depending from claims 11 and 17 respectively.

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and timely allowance of the application are respectfully requested.

To the extent necessary, a petition for an extension of time under 37 CFR § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this, concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and

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please credit any excess fees to such deposit account.

Respectfully submitted,
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A handwritten signature in black ink, appearing to read 'Daniel Y.J. Kim', written over the printed name and firm name.

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